

Signal converter

Signal converter	SK 1D-1A2RS	Digital - Analog / Serial
-------------------------	--------------------	----------------------------------



This compact signal converter with pulse inputs for two incremental encoders or measuring systems allows converting a frequency as well as sum, a difference, a product or a ratio between two frequencies into an analog signal. The integrated RS232 interface transmits the result of the connected inputs in the form of a serial signal.

The module can be easily and conveniently mounted in a cabinet on a standard DIN rail.



DC 18 ... 30 V Power supply	max. 1 MHz Input frequency	mA, V Analog output	RS 232 485 Interfaces	DIN-rail mounting
--	---	-------------------------------	---------------------------------	--------------------------

Characteristics

- Extremely short conversion time of only 1 ms ($f > 2$ kHz).
- Variable input frequency (adjustable from 0.1 Hz to 1 MHz).
- Convenient parameterizing by TEACH function or with a PC.
- Direction of rotation of the output signal is determined by the polarity.
- Variable linearization curves thanks to programmable digital filter and setting possibility.
- Converts also the sum, difference, product or ration between two frequencies.
- Analog output with ± 10 V or 0 or 4 ... 20 mA.
- RS232 or RS485 interface for serial read-out of the encoder frequency.

Benefits

- Integration of fast frequency inputs in the PLC.
- Frequency monitoring possible also with an analog input.
- Usable in combination with encoders and sensors.
- Wide range of converter control possibilities (HTL, TTL / RS422).

Order no.

Signal converter

8.SK.1D-1A2RS

Scope of delivery
- Signal converter
- Manual

Connection technology

Order no.

Cordset, pre-assembled

Sub-D male contacts, 9-pin, with cable outlet 70°
single-ended
2 m [6.56'] PVC cable ¹⁾

8.0000.6V00.0002.0082

Connector, self-assembly

Sub-D male contacts, 9-pin, with cable outlet 70°

8.0000.514A.0000

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology.
You will find an overview of our systems and components for Functional Safety and the corresponding software in the safety technology section or under www.kuebler.com/safety.

1) Other lengths available.

Signal converter

Signal converter	SK 1D-1A2RS	Digital - Analog / Serial
-------------------------	--------------------	----------------------------------

Technical data

Electrical characteristics	
Power supply	18 ... 30 V DC (residual ripple $\leq 10\%$ at 24 V DC)
Power consumption (no load)	approx. 75 mA at 24 V (auxiliary voltage)
Reverse polarity protection of the power supply	yes
Type of connection	screw terminal, 1.5 mm ²
Encoder supply	output voltage + 5.5 VDC / $\pm 5\%$ output current max. 250 mA
Conformity and standards	
EMC guideline 2014/30/EU	EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
RoHS guideline 2011/65/EU	EN 50581

Mechanical characteristics	
Material	housing plastic
Mounting	35 mm DIN rail (acc. to EN 60715)
Dimensions (W x H x D)	40 x 79 x 91 mm [1.57 x 3.11 x 3.58"]
Protection	IP20
Weight	approx. 190 g [6.70 oz]
Working temperature	0°C ... +45°C [+32°F ... +113°F] non condensing
Storage temperature	-25°C ... +70°C [-13°F ... +158°F] non condensing
Failure rate (MTBF in years)	75.2 a continuous operation at 60°C [140°F]

Incremental input X1 + X2		
Level	RS422	Differential voltage $> 1\text{ V}$
HTL characteristic	TTL HTL	LOW: 0 ... 0.5 V / HIGH: 2.5 ... 5.3 V LOW: 0 ... 3 V / HIGH: 10 ... 30 V NPN / PNP
HTL internal resistance	$R_i \approx 4.75\text{ k}\Omega$	
Tracks	A, /A, B, /B	
Frequency	TTL symmetrical HTL asymmetrical	max. 1 MHz at RS422 and TTL max. 200 kHz at HTL and TTL
Measurement accuracy	0.02%, ± 1 digit	

Control input	
Use	Proximity switch or commands
Signal level	LOW $< 3\text{ V}$ / HIGH $> 10\text{ V}$
Pulse duration	min. 5 ms

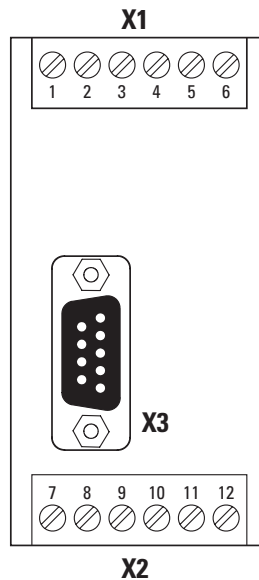
Analog output X1 + X2	
Voltage	$\pm 10\text{ V}$ (external load max. 5 k Ω)
Current	0/4 ... 20 mA (load max. 270 Ω)
Resolution	14 bit
Accuracy input	0.1%
Resolution per bit	1.25 mV / 2.5 μA
Reaction time (in normal operation)	approx. 1 ms depending on sampling time and frequency, ($f_{in} > 2\text{ kHz}$); $1/f_{in}$ (in $f_{in} < 1\text{ kHz}$)
Zero setting time (in case of sudden interruption)	5 ms (without average value), 700 ms (max. average value)

Serial interface X3	
Format	RS232 or RS485
Baud rate (switchable)	600, 1200, 2400, 4800, 9600 (standard), 19200, 38400 Baud
Operating modes	PC mode or Printer mode
Type of connection	Sub-D female contacts, 9-pin

Signal converter

Signal converter	SK 1D-1A2RS	Digital - Analog / Serial
-------------------------	--------------------	----------------------------------

Terminal assignment



Interface	Function	Screw terminals, 2 x 6-pin													
Connection X1, X2		Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	V_{out}	I_{out}	Contr	0 V	GND	$5.5 V_{out}$	
	Power supply	Pin :	6	5	-	-	-	-	-	-	-	-	-	-	-
	Input TTL	Pin :	-	-	9	8	3	2	-	-	10	-	12	11	
	Input HTL	Pin :	-	-	9	-	3	-	-	-	10	-	12	11	
	Analog output	Pin :	-	-	-	-	-	-	1	7	10	4	-	-	

Interface	Function	Sub-D female contacts, 9-pin							
Connection X3		Signal:	0 V	TxD	RxD	T+	T-	R+	R-
	RS232	Pin :	5	3	2	-	-	-	-
	RS485 (2-wire)	Pin :	-	-	-	8	7	-	-
	RS485 (4-wire)	Pin :	-	-	-	8	7	6	1

- +V : Power supply
- 0 V : Encoder power supply ground GND (0 V)
- A, \bar{A} : Incremental output channel A (Cosine)
- B, \bar{B} : Incremental output channel B (Sine)
- V_{out} : Voltage output (+/- 10 V)
- I_{out} : Current output (0 ... 20 mA / 4 ... 20 mA)
- Contr : Control input
- GND : Power supply ground GND (0 V)
- T+, T- : Transmit +/- (RS485)
- R+, R- : Receive +/- (RS485)
- TxD : Transmit (RS232)
- RxD : Receive (RS232)

Signal converter

Signal converter

SK 1D-1A2RS

Digital - Analog / Serial

Dimensions

Dimensions in mm [inch]

